

#### AT4 wireless, S.A.

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# ASSESSMENT REPORT

**Report No.:** 32468BIDT.001

**REPORT ON:** RF EXPOSURE ASSESSMENT OF THE C3607W ERICSSON

MOBILE BROADBAND MODULE INSTALLED IN GENERIC HOST PLATFORMS COVERING 7 DIFFERENT COLLOCATION

SCENARIOS.

**Product** : Ericsson Mobile Broadband Module

Trade Mark : Ericsson Model : C3607w

FCC ID / IC: : VV7-MBMC3607W2 / 287AG-MBMC3607W

Manufacturer: Ericsson ABRequested by: Ericsson AB

**Host Platform**: Generic host platforms covering 7 different collocation

scenarios

Standard(s) : OET Bulletin 65 Edition 97-01 August 1997

FCC 47 CFR § 1.1307 FCC 47 CFR § 1.1310

RSS-102 Issue 4 - March 2010 EN 62311:2008 / 1999/519/EC

Radiocommunications (Electromagnetic Radiation -

Human Exposure) Standard 2003

ARPANSA RPS No. 3

AS 2772.2-1998:Radiofrequency radiation – Part 2

Vodafone requirements [1999/519/EC]

This test report includes 2 annexes and therefore, the total number of pages is 36.

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Issued by: Approved by: Date: 2010-11-29 Date: 2010-11-29

Nadia Martínez Juan Carlos Mora Worldwide Compliance Technical Manager

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# 1. COMPETENCE AND GUARANTEES

AT4 wireless is a testing laboratory competent to carry out the evaluation described in this report.

AT4 wireless guarantees the reliability of the data presented in this report, which is based on the information available at AT4 wireless at the time of performance of the evaluation.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under review and the results of such evaluation

### 2. GENERAL CONDITIONS

- 1. This report refers only to the item that has undergone the evaluation as described in Annex A of this report according to the information provided by the applicant.
- 2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
- 3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
- 4. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

# 3. CHARACTERISTICS OF THE EVALUATION

#### 3.1. SERVICES REQUESTED

RF exposure assessment of the C3607w Ericsson Mobile Broadband Module installed in generic host platforms covering 7 different collocation scenarios according to:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields	
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.	GSM 850, FDD V, PCS 1900, FDD II
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.  RSS-102 Issue 4 - March 2010	
EN 62311:2008 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)  1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800, FDD I

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Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003	
ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	FDD V, E-GSM 900, DCS 1800, FDD I
AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz	
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II, FDD I

# 3.2. REQUIREMENTS AND METHOD

The evaluation has been carried out according to the following documents and standards:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields	
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.	GSM 850, FDD V, PCS 1900, FDD II
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.	
RSS-102 Issue 4 - March 2010	
EN 62311:2008 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)  1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800, FDD I
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003	
ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	FDD V, E-GSM 900, DCS 1800, FDD I
AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz	
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II, FDD I

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# 4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data included in this section has been supplied by the client.

#### 4.1. APPLICANT

Name / Company: Ericsson AB

V.A.T. Registration number: SE 556056625801 Address: Lindholmspiren 11, SE-417 56 Goteborg

Country: Sweden

#### 4.2. REPRESENTATIVE

Name: Bernie Fuller

Address: Lindholmspiren 11, SE-417 56 Goteborg

Country: Sweden

#### 4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED

**Product:** Ericsson Mobile Broadband Module

Trade mark: Ericsson Model: C3607w

FCC ID: VV7-MBMC3607W2 IC: 287AG-MBMC3607W

Manufacturer: Ericsson AB

Country of manufacture: China

**Host platform:** Generic host platforms covering 7 different collocation scenarios **Description:** 2G (GSM/GPRS/EDGE Class 10: 850/900/1800/1900 MHz) and 3G

(WCDMA/HSDPA/HSUPA Release 6: FDD I, FDD II, FDD V) module installed in

generic host platforms covering 7 different collocation scenarios.

#### 5. EVALUATION RESULTS

Abbreviations used in the VERDICT column of the following tables are:

**C** Compliant with requirements

**NC** Not Compliant with requirements

NA Not Applicable

NE Not Evaluated

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# 5.1. RESULTS FOR ITEM EVALUATED TRANSMITTING ALONE

DOCUMENT/STANDARD	VERDICT			
DOCUMENT/STANDARD		C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields				
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.		C		
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.				
RSS-102 Issue 4 - March 2010				
EN 62311:2008 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)		C		
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)		C		
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003				
ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)		C		
AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz				
Vodafone requirements [1999/519/EC]		C		

# 5.2. RESULTS FOR ITEM EVALUATED TRANSMITTING SIMULTANEOUSLY WITH OTHER COLLOCATED TRANSMITTERS

DOCUMENT/STANDARD	VERDICT			
DOCUMEN 1/STANDARD	NA	C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields				
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.		C		
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.				
RSS-102 Issue 4 - March 2010				
EN 62311:2008 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)		C		
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)		C		

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Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003	
ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	С
AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz	
Vodafone requirements [1999/519/EC]	С

# 6. REMARKS AND COMMENTS

GSM and GPRS modes have been evaluated together because both modes share the same power class and modulation scheme in the uplink.

WCDMA and HSDPA modes have been evaluated together because HSDPA is an improved mode of operation only for Downlink (equipment reception), but using the normal WCDMA mode for the Uplink (equipment transmission).

#### 7. SUMMARY

Considering the results of the performed analysis and evaluation, stated in annexes A and B, the item under evaluation is **IN COMPLIANCE** with the specifications listed in section 3.1 "SERVICES REQUESTED".

NOTE: The results presented in this report apply only to the particular item under evaluation established in section "4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED" of this document, as presented for evaluation by the applicant.

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# ANNEX A

# **HOST PLATFORMS ANALYSIS**

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#### A.1. SCENARIO 1

Scenario 1 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a Bluetooth transmitter (C3607w antenna-to-Bluetooth antenna distance < 20 cm) which is also in mobile exposure conditions. Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### MAIN/PRIMARY TRANSMITTER:

#### **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
G5W1 650	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
LDD A	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-G5W 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DCS 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
1 CS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
LDD I	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### **Bluetooth transmitter:**

Type of equipment : Bluetooth <sup>1</sup>

Trade mark : Any Model : Any FCC ID / IC : Any

Output power : See table below

Scenario 1							
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)				
Bluetooth	100	76%	76,43				

<sup>&</sup>lt;sup>1</sup> It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

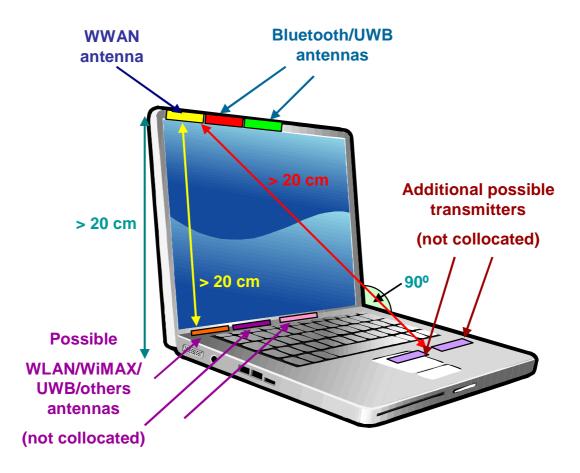
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#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - o Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - o Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

#### **SAMPLE CONFIGURATION:**



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#### A.2. SCENARIO 2

Scenario 2 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter (C3607w antenna-to-WLAN antenna distance < 20 cm) which is also in mobile exposure conditions.

WLAN transmitter may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### MAIN/PRIMARY TRANSMITTER:

# **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSIVI 650	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
rud v	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSM 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DCS 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
FCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
I DD I	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### WLAN transmitter:

Type of equipment : WLAN<sup>2</sup>
Trade mark : Any
Model : Any
FCC ID / IC : Any

Output power : See table below

Scenario 3						
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)			
WLAN	2000	100%	2000,00			

 $<sup>^2</sup>$  It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

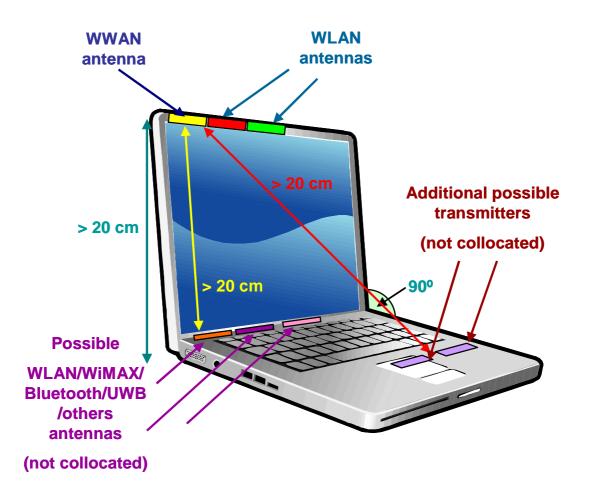
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#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP: 2000 mW
  - o Any WLAN transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

#### **SAMPLE CONFIGURATION:**



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#### A.3. SCENARIO 3

Scenario 3 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter and a Bluetooth transmitter (C3607w antenna-to-WLAN/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN transmitter may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### **MAIN/PRIMARY TRANSMITTER:**

#### WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSM 830	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
LDD A	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSM 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DCS 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
PCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
LUUI	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### ADDITIONAL/SECONDARY TRANSMITTERS:

# **WLAN transmitter:**

Type of equipment : WLAN<sup>3</sup>
Trade mark : Any
Model : Any
FCC ID / IC : Any

Output power : See table below

Scenario 3					
Type of transmitter   Maximum EIRP (mW)   Duty Cycle   EIRP (mW					
WLAN	2000	100%	2000,00		

<sup>&</sup>lt;sup>3</sup> It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

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#### **Bluetooth transmitter:**

Type of equipment : Bluetooth <sup>4</sup>

Trade mark : Any Model : Any FCC ID / IC : Any

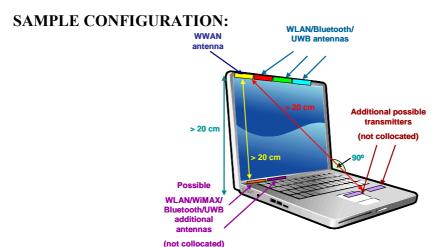
Output power : See table below

Scenario 3					
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)		
Bluetooth	100	76%	76,43		

<sup>&</sup>lt;sup>4</sup> It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - o Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP: 2000 mW
  - o Any WLAN transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.



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#### A.4. SCENARIO 4

Scenario 4 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WiMAX transmitter (C3607w antenna-to-WiMAX antenna distance < 20 cm) which is also in mobile exposure conditions.

WiMAX transmitter may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

### MAIN/PRIMARY TRANSMITTER:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSIM 920	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
rud v	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSWI 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DC3 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
FCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
FDD II	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
LOD I	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

# ADDITIONAL/SECONDARY TRANSMITTERS:

#### WiMAX transmitter:

Type of equipment : WiMAX<sup>5</sup>
Trade mark : Any
Model : Any
FCC ID / IC : Any

Output power : See table below

Scenario 4						
Type of transmitter   Maximum EIRP (mW)   Duty Cycle   EIRP (mW)						
WiMAX	2000	100%	2000,00			

<sup>&</sup>lt;sup>5</sup> It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

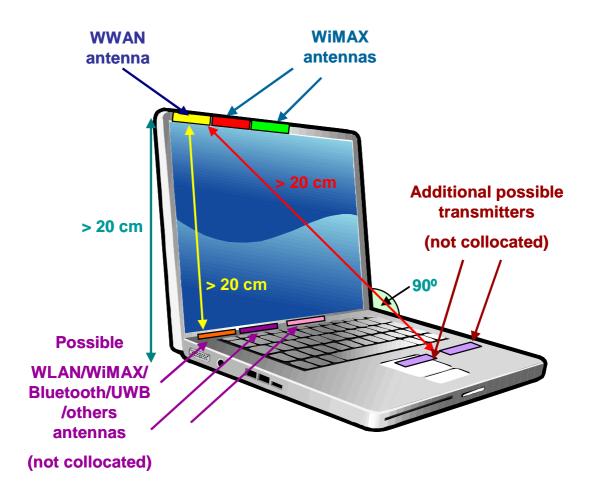
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#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WiMAX EIRP: 2000 mW
  - o Any WiMAX transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

#### **SAMPLE CONFIGURATION:**



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#### A.5. SCENARIO 5

Scenario 5 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WiMAX transmitter and a Bluetooth transmitter (C3607w antenna-to-WiMAX/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WiMAX transmitter may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### MAIN/PRIMARY TRANSMITTER:

#### **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSIM 920	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
V UU1	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSWI 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DC3 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
PCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
FDD II	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
ן טטז	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### WiMAX transmitter:

Type of equipment : WiMAX <sup>6</sup>
Trade mark : Any
Model : Any
FCC ID / IC : Any

Output power : See table below

Scenario 5					
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)		
WiMAX	2000	100%	2000,00		

<sup>&</sup>lt;sup>6</sup> It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

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#### **Bluetooth transmitter:**

Type of equipment : Bluetooth <sup>7</sup>

Trade mark : Any Model : Any

FCC ID / IC : Any
Output power : See table below

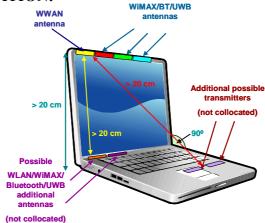
Scenario 5					
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)		
Bluetooth	100	76%	76,43		

<sup>&</sup>lt;sup>7</sup> It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WiMAX EIRP: 2000 mW
  - o Any WiMAX transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

#### **SAMPLE CONFIGURATION:**



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#### A.6. SCENARIO 6

Scenario 6 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter and a WiMAX transmitter (C3607w antenna-to-WLAN/WiMAX antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN/WiMAX transmitters may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### **MAIN/PRIMARY TRANSMITTER:**

#### **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSIM 920	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
rud v	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSWI 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DCS 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
PCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
וו טטז	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
EDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
FDD I	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### WLAN/WiMAX transmitter:

Type of equipment : WLAN / WiMAX

Trade mark : Any Model : Any FCC ID / IC : Any

Output power : See table below

Scenario 6					
Type of transmitter   Maximum EIRP (mW)   Duty Cycle   EIRP (mW)					
WLAN / WiMAX	2000 8	100%	2000,00		

<sup>&</sup>lt;sup>8</sup> Aggregated EIRP of WLAN and WiMAX transmitters

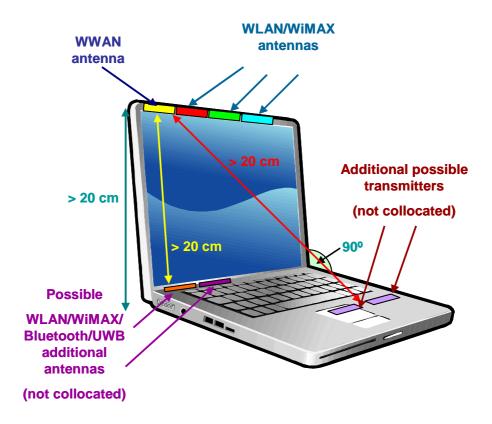
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#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP + WiMAX EIRP: 2000 mW
  - Any WLAN transmitter and WiMAX transmitters with aggregated EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - o Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

#### **SAMPLE CONFIGURATION:**



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#### A.7. SCENARIO 7

Scenario 6 covers a host device where the C3607w Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter a WiMAX transmitter and a Bluetooth transmitter (C3607w antenna-to-WLAN/WiMAX/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN/WiMAX transmitters may have other antennas in portable exposure conditions but they are not collocated with C3607w Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with C3607w Ericsson Mobile Broadband Module.

#### MAIN/PRIMARY TRANSMITTER:

#### **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : C3607w

FCC ID / IC : VV7-MBMC3607W2 / 287AG-MBMC3607W Maximum antenna gain : Low bands: 3.00 dBi // High bands: 2.97 dBi

Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	32,73	1874,99	25%	468,75	3,00	2,00	935,28
GSIVI 650	EDGE	824,2 - 848,8	30,89	1227,44	25%	306,86	3,00	2,00	612,27
FDD V	WCDMA/HSDPA	826,4 - 846,6	27,80	602,56	100%	602,56	3,00	2,00	1202,26
rdd v	HSUPA	826,4 - 846,6	26,79	477,53	100%	477,53	3,00	2,00	952,80
E-GSM 900	GSM/GPRS	880,2 - 914,8	32,30	1698,24	25%	424,56	3,00	2,00	847,11
E-GSWI 900	EDGE	880,2 - 914,8	27,40	549,54	25%	137,39	3,00	2,00	274,12
DCS 1800	GSM/GPRS	1710,2 - 1784,8	29,70	933,25	25%	233,31	2,97	1,98	462,32
DCS 1800	EDGE	1710,2 - 1784,8	26,60	457,09	25%	114,27	2,97	1,98	226,43
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,77	948,42	25%	237,10	2,97	1,98	469,83
FCS 1900	EDGE	1850,2 - 1909,8	30,04	1009,25	25%	252,31	2,97	1,98	499,97
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	28,09	644,17	100%	644,17	2,97	1,98	1276,44
rdd II	HSUPA	1852,4 - 1907,6	27,26	532,11	100%	532,11	2,97	1,98	1054,39
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	23,43	220,34	100%	220,34	2,97	1,98	436,62
TDD I	HSUPA	1922,4 - 1977,6	22,62	182,94	100%	182,94	2,97	1,98	362,49

#### WLAN/WiMAX transmitter:

Type of equipment : WLAN / WiMAX

Trade mark : Any Model : Any FCC ID / IC : Any

Output power : See table below

Scenario 6					
Type of transmitter   Maximum EIRP (mW)   Duty Cycle   EIRP (mW)					
WLAN / WiMAX	2000 9	100%	2000,00		

<sup>&</sup>lt;sup>9</sup> Aggregated EIRP of WLAN and WiMAX transmitters

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#### **Bluetooth transmitter:**

Type of equipment : Bluetooth <sup>10</sup>

Trade mark : Any Model : Any FCC ID / IC : Any

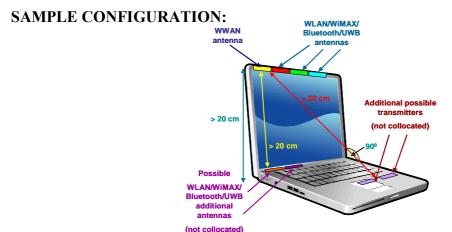
Output power : See table below

Scenario 5						
Type of transmitter	Maximum EIRP (mW)	<b>Duty Cycle</b>	EIRP (mW)			
Bluetooth	100	76%	76,43			

<sup>&</sup>lt;sup>10</sup> It could be also Bluetooth + UWB transmitter) UWB contribution does not need to be considered.

#### **WORST CASE CONSIDERATIONS:**

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- C3607w antenna gains: Low bands: 3.00 dBi // High bands: 2.97 dBi
  - o Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP + WiMAX EIRP: 2000 mW
  - Any WLAN transmitter and WiMAX transmitters with aggregated EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.



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# **ANNEX B**

# RF EXPOSURE ASSESSMENT

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# **B.1. MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMITS**

#### **B.1.1. FCC/IC LIMITS**

#### **Normative documents:**

- OET Bulletin 65 Edition 97-01 August 1997 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
- FCC 47 CFR § 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
- FCC 47 CFR § 1.1310 Radiofrequency radiation exposure limits.1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)
- RSS-102 Issue 4 March 2010

#### **Reference levels:**

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density $(\frac{mW}{cm^2})$	Averaging time (minutes)
300 – 1500	$\frac{f(MHz)}{1500}$	30
1500 - 100.000	1.0	30

The table below is excerpted from item 4.2 of RSS-102 Issue 4, titled RF Field Strength Limits for Devices Used by the General Public:

Frequency Range (MHz)	Power density $(\frac{W}{m^2})$	Averaging time (minutes)
300 – 1500	f (MHz ) /150	6
1500 - 100.000	10	6

#### **MPE limits:**

- Main/Primary transmitter (C3607w Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$MPE \ limit \\ (S_{eq}) \\ (\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,5495
G5W 650	EDGE	824,2 - 848,8	824,20	0,5495
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,5509
FDD V	HSUPA	826,4 - 846,6	826,40	0,5509
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	1,0000
FCS 1900	EDGE	1850,2 - 1909,8	1850,20	1,0000
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	1,0000
	HSUPA	1852,4 - 1907,6	1852,40	1,0000

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- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 1.5 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.1.2. EUROPEAN UNION MPE LIMITS**

#### **Normative document:**

- EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz 300 GHz)
- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

#### **Reference levels:**

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

Frequency range	E-field strength $(\frac{V}{m})$	H-field strength $(\frac{A}{m})$	B-field (μT)	Equivalent plane wave power density $S_{eq}$ $(\frac{W}{m^2})$
400 - 2000 MHz	$\boxed{1,375\cdot f(MHz)^{1/2}}$	$0,0037 \cdot f(MHz)^{1/2}$	$0,0046 \cdot f(\mathit{MHz})^{1/2}$	$\frac{f(MHz)}{200}$
2 - 300 GHz	61	0,16	0,2	10

#### **MPE limits:**

- Main/Primary transmitter (C3607w Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$MPE limit (S_{eq}) (\frac{mW}{cm^2})$
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-GSM 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DCS 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.1.3. AUSTRALIA MPE LIMITS**

#### **Normative documents:**

- Radiocommunications (Electromagnetic Radiation Human Exposure) Standard 2003
- ARPANSA RPS No. 3 Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)

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- AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz

#### **Reference levels:**

The table below is excerpted from Table 7 of ARPANSA RPS No. 3, titled "Reference levels for time averaged exposure to RMS electric and magnetic fields (unperturbed rms values)":

Exposure category	Frequency range	E-field strength $(\frac{V}{m} \text{ rms})$	H-field strength $(\frac{A}{m} \text{ rms})$	Equivalent plane wave power density $\frac{S_{eq}}{\left(\frac{W}{m^2}\right)}$	Equivalent plane wave power density $S_{eq}$ $(\frac{mW}{cm^2})$
General public	400 MHz - 2 GHz	$1{,}37 \cdot f(MHz)^{1/2}$	$0,00364 \cdot f(\textit{MHz})^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

#### **MPE limits:**

- Main/Primary transmitter (C3607w Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$MPE \ limit \\ (S_{eq}) \\ (\frac{mW}{cm^2})$
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
LDD A	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-GSM 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DCS 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.1.4. VODAFONE MPE LIMITS**

#### **Normative document:**

- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

#### **Reference levels:**

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

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Exposure category	Frequency range	E-field strength $(\frac{V}{m} \text{ rms})$	H-field strength $(rac{A}{m} \text{ rms})$	Equivalent plane wave power density $\frac{S_{eq}}{\left(\frac{W}{m^2}\right)}$	Equivalent plane wave power density $S_{eq}$ $(\frac{mW}{cm^2})$
General public	400 MHz - 2 GHz	$1{,}37\cdot f(MHz)^{1/2}$	$0,00364 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

#### **MPE limits:**

- Main/Primary transmitter (C3607w Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,4121
GSM 650	EDGE	824,2 - 848,8	824,20	0,4121
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
TDD V	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-G5M 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DCS 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	0,9251
1 CS 1900	EDGE	1850,2 - 1909,8	1850,20	0,9251
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	0,9262
וו עערז	HSUPA	1852,4 - 1907,6	1852,40	0,9262
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
FDD1	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.2.** RF EXPOSURE ASSESSMENT – INDIVIDUAL TRANSMITTERS

#### **B.2.1. INTRODUCTION**

Calculations to predict power density levels in the far-field of the antenna are made by use of the following equation:

$$S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

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# B.2.2. RF EXPOSURE ASSESSMENT FOR C3607W ERICSSON MOBILE BROADBAND MODULE INSTALLED IN GENERIC HOST PLATFORMS

# FCC / IC REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	$MPE \ limit (S_{Lim}) \\ (\frac{mW}{cm^2})$	$\begin{aligned} & \text{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
GSM 850	GSM/GPRS	824,2 - 848,8	935,28	20,00	0,1861	0,5495	COMPLIANT
G5W 650	EDGE	824,2 - 848,8	612,27	20,00	0,1218	0,5495	COMPLIANT
FDD V	WCDMA/HSDPA	826,4 - 846,6	1202,26	20,00	0,2392	0,5509	COMPLIANT
TDD V	HSUPA	826,4 - 846,6	952,80	20,00	0,1896	0,5509	COMPLIANT
PCS 1900	GSM/GPRS	1850,2 - 1909,8	469,83	20,00	0,0935	1,0000	COMPLIANT
PCS 1900	EDGE	1850,2 - 1909,8	499,97	20,00	0,0995	1,0000	COMPLIANT
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1276,44	20,00	0,2539	1,0000	COMPLIANT
וו טטיו	HSUPA	1852,4 - 1907,6	1054,39	20,00	0,2098	1,0000	COMPLIANT

# **EUROPEAN UNION REQUIREMENTS**

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	$MPE \ limit (S_{Lim}) (\frac{mW}{cm^2})$	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	847,11	20,00	0,1685	0,4401	COMPLIANT
E-05W 900	EDGE	880,2 - 914,8	274,12	20,00	0,0545	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	462,32	20,00	0,0920	0,8551	COMPLIANT
DCS 1800	EDGE	1710,2 - 1784,8	226,43	20,00	0,0450	0,8551	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	436,62	20,00	0,0869	0,9612	COMPLIANT
ו עעיו	HSUPA	1922,4 - 1977,6	362,49	20,00	0,0721	0,9612	COMPLIANT

# **AUSTRALIA REQUIREMENTS**

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S <sub>Lim</sub> ) (mW/cm²)	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	1202,26	20,00	0,2392	0,4132	COMPLIANT
TDD V	HSUPA	826,4 - 846,6	952,80	20,00	0,1896	0,4132	COMPLIANT
E-GSM 900	GSM/GPRS	880,2 - 914,8	847,11	20,00	0,1685	0,4401	COMPLIANT
E-GSWI 900	EDGE	880,2 - 914,8	274,12	20,00	0,0545	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	462,32	20,00	0,0920	0,8551	COMPLIANT
DCS 1800	EDGE	1710,2 - 1784,8	226,43	20,00	0,0450	0,8551	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	436,62	20,00	0,0869	0,9612	COMPLIANT
ו עטו	HSUPA	1922,4 - 1977,6	362,49	20,00	0,0721	0,9612	COMPLIANT

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# **VODAFONE REQUIREMENTS**

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit $(S_{Lim})$ $(\frac{mW}{cm^2})$	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
GSM 850	GSM/GPRS	824,2 - 848,8	935,28	20	0,1861	0,4121	COMPLIANT
G5W 650	EDGE	824,2 - 848,8	612,27	20	0,1218	0,4121	COMPLIANT
FDD V	WCDMA/HSDPA	826,4 - 846,6	1202,26	20	0,2392	0,4132	COMPLIANT
TDD V	HSUPA	826,4 - 846,6	952,80	20	0,1896	0,4132	COMPLIANT
E-GSM 900	GSM/GPRS	880,2 - 914,8	847,11	20	0,1685	0,4401	COMPLIANT
E-03M 900	EDGE	880,2 - 914,8	274,12	20	0,0545	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	462,32	20	0,0920	0,8551	COMPLIANT
DCS 1800	EDGE	1710,2 - 1784,8	226,43	20	0,0450	0,8551	COMPLIANT
PCS 1900	GSM/GPRS	1850,2 - 1909,8	469,83	20	0,0935	0,9251	COMPLIANT
FCS 1900	EDGE	1850,2 - 1909,8	499,97	20	0,0995	0,9251	COMPLIANT
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1276,44	20	0,2539	0,9262	COMPLIANT
FDD II	HSUPA	1852,4 - 1907,6	1054,39	20	0,2098	0,9262	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	436,62	20	0,0869	0,9612	COMPLIANT
լ ՄԱ1	HSUPA	1922,4 - 1977,6	362,49	20	0,0721	0,9612	COMPLIANT

# B.2.3. RF EXPOSURE ASSESSMENT FOR SECONDARY TRANSMITTERS INSTALLED IN GENERIC HOST PLATFORMS

Model name	FCC ID	EIRP (mW)	Evaluation distance (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{\mathbf{mW}}{\mathbf{cm}^2}\right)$	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$	$\begin{array}{c} COMPLIANCE \\ (S_{eq} < S_{Lim}) \end{array}$
Scenario 1	Bluetooth	76,43	20,00	0,0152	1,0000	COMPLIANT
Scenario 2	WLAN	2000,00	20,00	0,3979	1,0000	COMPLIANT
Scenario 3	WLAN	2000,00	20,00	0,3979	1,0000	COMPLIANT
Scenario 3	Bluetooth	76,43	20,00	0,0152	1,0000	COMPLIANT
Scenario 4	WiMAX	2000,00	20,00	0,3979	1,0000	COMPLIANT
Scenario 5	WiMAX	2000,00	20,00	0,3979	1,0000	COMPLIANT
Scenario 3	Bluetooth	76,43	20,00	0,0152	1,0000	COMPLIANT
Comorio 6	WLAN	2000.00	20.00	0.2070	1,0000	COMPLIANT
Scenario 6	WiMAX	2000,00	20,00	0,3979	1,0000	COMPLIANT
	WLAN	2000.00	20.00	0.2070	1,0000	COMPLIANT
Scenario 7	WiMAX	2000,00	20,00	0,3979	1,0000	COMPLIANT
	Bluetooth	76,43	20,00	0,0152	1,0000	COMPLIANT

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#### **B.3.** RF EXPOSURE ASSESSMENT – COLLOCATION CONSIDERATIONS

#### **B.3.1. INTRODUCTION**

In situations where simultaneous exposure to fields of different equipment and frequencies occurs, the possibility that these exposures will be additive in their effects must be considered. Calculations based on this additivity are performed by the sum of relative exposure for each equipment according to the following compliance criteria:

$$\sum_{1}^{N} \frac{S_{eqn}}{S_{Limn}} = \frac{S_{eq1}}{S_{Lim1}} + \frac{S_{eq2}}{S_{Lim2}} + \dots + \frac{S_{eqN}}{S_{LimN}} \le 1$$

where:

 $S_{eq}$  is the power density of the electromagnetic field caused, at a given distance (evaluation distance), by a specific equipment transmitting at a defined frequency.

 $S_{Lim}$  is the MPE limit for the evaluated transmission frequency.

#### **B.3.2. FCC/IC REQUIREMENTS**

#### RELATIVE EXPOSURE FOR C3607w ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	$S_{ m eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1861	0,5495	0,3386
USIVI 630	EDGE	824,2 - 848,8	0,1218	0,5495	0,2217
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2392	0,5509	0,4341
LDD A	HSUPA	826,4 - 846,6	0,1896	0,5509	0,3441
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,0935	1,0000	0,0935
FCS 1900	EDGE	1850,2 - 1909,8	0,0995	1,0000	0,0995
EDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,2539	1,0000	0,2539
FDD II	HSUPA	1852,4 - 1907,6	0,2098	1,0000	0,2098

#### RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	$\mathbf{S}_{\mathbf{eq}}$	$\mathbf{S}_{Lim}$	$rac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
Scellario 3	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Carrania 5	WiMAX	0,3979	1,0000	0,3979
Scenario 5	Bluetooth	0,0152	1,0000	0,0152

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Scenario 6	WLAN	0,3979	1,0000	0,3979	
Scenario o	WiMAX	0,3979	1,0000		
Scenario 7	WLAN	0,3979	1,0000	0,3979	
	WiMAX	0,3979	1,0000		
	Bluetooth	0,0152	1,0000	0,0152	

# SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$	
Scenario 1	Primary transmitter	Ericsson C3607w	0,4341	0,45	COMPLIANT	
Scenario 1	Secundary transmitter	Bluetooth	0,0152	0,15	COM EMIN	
Scenario 2	Primary transmitter	Ericsson C3607w	0,4341	0,83	COMPLIANT	
Scenario 2	Secundary transmitter	WLAN	0,3979	0,65	COMI LIANT	
	Primary transmitter	Ericsson C3607w	0,4341			
Scenario 3	Secundary transmitter	WLAN	0,3979	0,85	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
Scenario 4	Primary transmitter	Ericsson C3607w	0,4341	0,83	COMPLIANT	
Scenario 4	Secundary transmitter	WiMAX	0,3979	0,83	COMPLIANT	
	Primary transmitter	Ericsson C3607w	0,4341			
Scenario 5	Secundary transmitter	WiMAX	0,3979	0,85	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
	Primary transmitter	Ericsson C3607w	0,4341			
Scenario 6	Secundary transmitter	WLAN	0,3979	0,83	COMPLIANT	
	Secundary transmitter	WiMAX	0,3979			
	Primary transmitter	Ericsson C3607w	0,4341			
C	Secundary transmitter	WLAN	0.2070	0.05	COMPLIANT	
Scenario 7	Secundary transmitter	WiMAX	0,3979	0,85	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			

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# **B.3.3. EUROPEAN UNION REQUIREMENTS**

# RELATIVE EXPOSURE FOR C3607w ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	$S_{ m eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1685	0,4401	0,3829
E-08W 900	EDGE	880,2 - 914,8	0,0545	0,4401	0,1239
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,0920	0,8551	0,1076
DCS 1800	EDGE	1710,2 - 1784,8	0,0450	0,8551	0,0527
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0869	0,9612	0,0904
LDD1	HSUPA	1922,4 - 1977,6	0,0721	0,9612	0,0750

# RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	$S_{ m eq}$	$S_{Lim}$	$rac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
Scenario 3	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Samuria 5	WiMAX	0,3979	1,0000	0,3979
Scenario 5	Bluetooth	0,0152	1,0000	0,0152
Scenario 6	WLAN	0.2070	1,0000	0,3979
Scenario 6	WiMAX	0,3979	1,0000	0,3979
	WLAN	0.2070	1,0000	0.2070
Scenario 7	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152

# SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		$\frac{S_{eq}}{S_{Lim}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$
Scenario 1	Primary transmitter	Ericsson C3607w	0,3829	0,40	COMPLIANT
Scenario 1	Secundary transmitter	Bluetooth	0,0152	0,40	COMPLIANT
Scenario 2	Primary transmitter	Ericsson C3607w	0,3829	0,78	COMPLIANT
Scenario 2	Secundary transmitter	WLAN	0,3979	0,78	COMPLIANT

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	Primary transmitter	Ericsson C3607w	0,3829			
Scenario 3	Secundary transmitter	WLAN	0,3979	0,80	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
Scenario 4	Primary transmitter	Ericsson C3607w	0,3829	0,78	COMPLIANT	
Scenario 4	Secundary transmitter	WiMAX	0,3979	0,78	COMILIANT	
	Primary transmitter	Ericsson C3607w	0,3829			
Scenario 5	Secundary transmitter	WiMAX	0,3979	0,80	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
	Primary transmitter	Ericsson C3607w	0,3829			
Scenario 6	Secundary transmitter	WLAN	0,3979	0,78	COMPLIANT	
	Secundary transmitter	WiMAX	0,3979			
	Primary transmitter	Ericsson C3607w	0,3829			
Scenario 7	Secundary transmitter	WLAN	0,3979	0,80	COMPLIANT	
	Secundary transmitter	WiMAX	0,37/7		COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			

# **B.3.4. AUSTRALIA REQUIREMENTS**

# RELATIVE EXPOSURE FOR C3607w ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	$S_{eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2392	0,4132	0,5789
LDD A	HSUPA	826,4 - 846,6	0,1896	0,4132	0,4587
E CCM 000	GSM/GPRS	880,2 - 914,8	0,1685	0,4401	0,3829
E-GSM 900	EDGE	880,2 - 914,8	0,0545	0,4401	0,1239
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,0920	0,8551	0,1076
DCS 1800	EDGE	1710,2 - 1784,8	0,0450	0,8551	0,0527
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0869	0,9612	0,0904
LDD1	HSUPA	1922,4 - 1977,6	0,0721	0,9612	0,0750

# RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	${f S}_{f eq}$	$\mathbf{S}_{Lim}$	$rac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
Scenario 3	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979

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Scenario 5	WiMAX	0,3979	1,0000	0,3979	
Scenario 3	Bluetooth	0,0152	1,0000	0,0152	
Scenario 6	WLAN	0,3979	1,0000	0,3979	
Scenario 6	WiMAX	0,3979	1,0000	0,3979	
	WLAN	0,3979	1,0000	0,3979	
Scenario 7	WiMAX	0,3979	1,0000	0,3979	
	Bluetooth	0,0152	1,0000	0,0152	

# SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		$\frac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$	$\begin{split} & \frac{S_{Pri}}{S_{Lim\_Pri}} + \\ & \frac{S_{Sec}}{S_{Lim\_Sec}} \end{split}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$	
Scenario 1	Primary transmitter	Ericsson C3607w	0,5789	0,59	COMPLIANT	
Section 1	Secundary transmitter	Bluetooth	0,0152	0,57	COM EMIN	
Scenario 2	Primary transmitter	Ericsson C3607w	0,5789	0,98	COMPLIANT	
Scenario 2	Secundary transmitter	WLAN	0,3979	0,76	COMI LIANT	
	Primary transmitter	Ericsson C3607w	0,5789			
Scenario 3	Secundary transmitter	WLAN	0,3979	0,99	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
Scenario 4	Primary transmitter	Ericsson C3607w	0,5789	0,98	COMPLIANT	
Scenario 4	Secundary transmitter	WiMAX	0,3979	0,96	COMPLIANT	
	Primary transmitter	Ericsson C3607w	0,5789			
Scenario 5	Secundary transmitter	WiMAX	0,3979	0,99	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			
	Primary transmitter	Ericsson C3607w	0,5789			
Scenario 6	Secundary transmitter	WLAN	0,3979	0,98	COMPLIANT	
	Secundary transmitter	WiMAX	0,3979			
	Primary transmitter	Ericsson C3607w	0,5789	_		
C	Secundary transmitter	WLAN	0,3979	0.00	COMPLIANT	
Scenario 7	Secundary transmitter	WiMAX	0,39/9	0,99	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			

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# **B.3.5. VODAFONE REQUIREMENTS**

# RELATIVE EXPOSURE FOR C3607w ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	$S_{ m eq}$	$S_{ m Lim}$	$\frac{S_{eq}}{S_{Lim}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1861	0,4121	0,4515
GSWI 830	EDGE	824,2 - 848,8	0,1218	0,4121	0,2956
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2392	0,4132	0,5789
TDD V	HSUPA	826,4 - 846,6	0,1896	0,4132	0,4587
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1685	0,4401	0,3829
E-GSWI 900	EDGE	880,2 - 914,8	0,0545	0,4401	0,1239
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,0920	0,8551	0,1076
DCS 1800	EDGE	1710,2 - 1784,8	0,0450	0,8551	0,0527
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,0935	0,9251	0,1010
FCS 1900	EDGE	1850,2 - 1909,8	0,0995	0,9251	0,1075
EDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,2539	0,9262	0,2742
FDD II	HSUPA	1852,4 - 1907,6	0,2098	0,9262	0,2265
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0869	0,9612	0,0904
	HSUPA	1922,4 - 1977,6	0,0721	0,9612	0,0750
GSM 850	GSM/GPRS	824,2 - 848,8	0,1861	0,4121	0,4515
GSIVI 830	EDGE	824,2 - 848,8	0,1218	0,4121	0,2956

# RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	$\mathbf{S}_{\mathbf{eq}}$	$\mathbf{S}_{Lim}$	$rac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
Scenario 3	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Scenario 5	WiMAX	0,3979	1,0000	0,3979
Scenario 5	Bluetooth	0,0152	1,0000	0,0152
Scenario 6	WLAN	0,3979	1,0000	0,3979
	WiMAX	0,3979	1,0000	0,3979
Scenario 7	WLAN	0.2070	1,0000	0.2070
	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152

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# SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\begin{split} & \frac{S_{Pri}}{S_{Lim\_Pri}} + \\ & \frac{S_{Sec}}{S_{Lim\_Sec}} \end{split}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$	
Scenario 1	Primary transmitter	Ericsson C3607w	0,5789	0,59	COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152	0,00	COM EMIN	
Scenario 2	Primary transmitter	Ericsson C3607w	0,5789	0,98	COMPLIANT	
Sectian 10 2	Secundary transmitter	WLAN	0,3979	0,70	COMI EMAINI	
	Primary transmitter	Ericsson C3607w	0,5789		COMPLIANT	
Scenario 3	Secundary transmitter	WLAN	0,3979	0,99		
	Secundary transmitter	Bluetooth	0,0152			
Scenario 4	Primary transmitter	Ericsson C3607w	0,5789	0,98	COMPLIANT	
Scenario 4	Secundary transmitter	WiMAX	0,3979	0,98		
	Primary transmitter	Ericsson C3607w	0,5789		COMPLIANT	
Scenario 5	Secundary transmitter	WiMAX	0,3979	0,99		
	Secundary transmitter	Bluetooth	0,0152			
	Primary transmitter	Ericsson C3607w	0,5789			
Scenario 6	Secundary transmitter	WLAN	0,3979	0,98	COMPLIANT	
	Secundary transmitter	WiMAX	0,3979			
	Primary transmitter	Ericsson C3607w	0,5789			
Scenario 7	Secundary transmitter	WLAN	0.2070	0.00	COMPLIANT	
	Secundary transmitter	WiMAX	<b>0,3979 0,99</b>		COMPLIANT	
	Secundary transmitter	Bluetooth	0,0152			

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